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Effects of gas flare from Utorogu gas plant on biochemical variables of Cassava leaves (*Manihot esculentum*), Delta State

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Gas flaring is a major contributor to the emission of toxic gases and other gaseous pollutants into the atmosphere. This study investigates the impact of gas flare on leaves of Cassava around Utorogu gas plant, Delta State. Three sampling locations were chosen at 1 km, 2 km and 3 km consecutively from the gas flare stack and a control location at Orerokpe. Ambient air quality was determined for methane (CH₄) (ppm), oxide of sulphur (SO_x) (ppm), oxide of nitrogen (NO_x) (ppm), carbon monoxide (CO) (ppm), and hydrogen sulphide (H₂S) (ppm). Leaves collected were taken to the laboratory for analysis. Relative leaf water content (RLWC) (%), total chlorophyll content (TCC) (mg/m³), leaf extract pH (LEP) (mol/liter) and ascorbic acid content (AAC) (mg) were determined under standard laboratory methods. Ensuing data were subjected to standard statistical analysis. Results showed that CH₄ varied from 38.00-92.00 ppm, H₂S from 0.05-1.20 ppm, CO from 11.00-26.40 ppm, SO₂ from 252.00-340.00 ppm and NO₂ from 82.00-190.00 ppm. RLWC varied from 30.50-56.33, TCC varied from 1.98-4.66, LEP varied from 4.50-7.00 mol/litre and AAC varied from 0.03-0.15. It was revealed that NO_x, SO_x and CO exceeded NESREA's short-term tolerance limits for ambient air pollutants of (40-60) ppm, 100 ppm, and 10 ppm respectively. This shows that air pollutants exerted significant inhibitory influence on biochemical activities of the leaf studied. Environmental regulatory agencies and oil exploration companies should help reduce gas flaring to avoid damages to crop production.

Biography

Njoku-Tony Roseline Feechi is a PhD holder in Medical Parasitology. She is currently a Lecturer at the Department of Environmental Sciences (Pollution Control Option) at Federal University of Technology Owerri, Nigeria. She is focusing her research interest in pollution control and elimination of neglected tropical diseases.

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